



MARKET POTENTIAL

Kansas State University

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Research Analysis

The prototype home for St. John intends to serve the population group most likely to seek a home in Stafford County: homebuyers between the ages of 25 to 44 years, with one to two children, and with a median annual income between \$25,000 to \$50,000. Analysis of the housing stock in St. John revealed there are few housing options for this group, with homes made scarcer by the loss of housing units due to neglect and demolition. To provide a solution to the housing problem in St. John, the studio designed the prototype to be affordable, high-quality both physically and psychologically, to be constructed and occupied quickly, and easily replicable: all key to ending the affordable housing drought in St. John and giving the town an important tool for sustaining itself in the future.

Living in a smaller town often means a greater reliance on the home as a social and active space. The prototype home delivers by providing a clear connection to outdoors, while using high ceilings and carefully designed custom casework to make the interior of the house more functional and open.

For those who enjoy the atmosphere of the town and choose to live in St. John, settling in town may be difficult due to the lack of available, quality, and affordable housing.

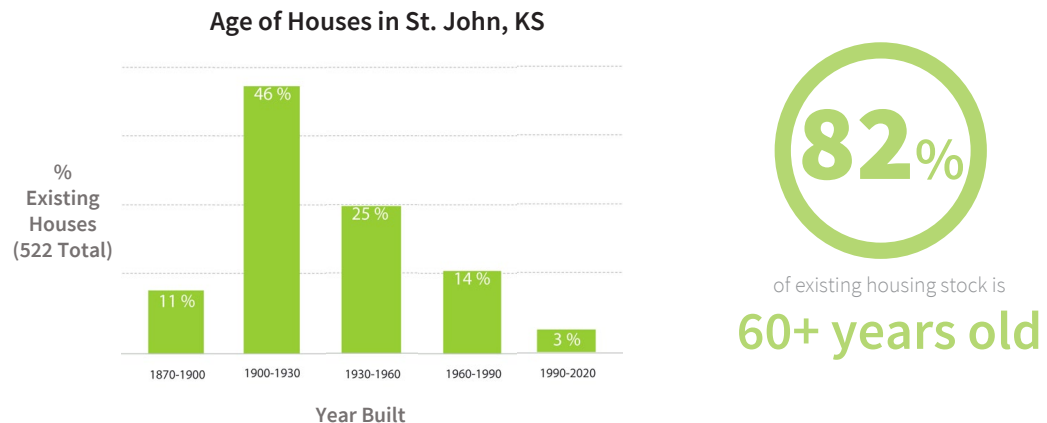
Standing against the cliché of a shrinking Midwestern town, a majority of community members are between the ages of 25-44 years old. From this demographic, many work at enterprises and institutions within the county, such as the Kanza Coop Grain Mill, Stafford County Flour Mills (makers of Hudson Cream Flour), or St. John Public School. For people in this age bracket, household income is between \$25,000 to \$50,000 a year, which trends below the area median income (AMI) of \$47,000; 11.5% of the population live below the \$25,000 poverty line. Households, on average, have one to two children with a minimum of two cars and median commute time of nineteen minutes, due to some individuals traveling to surrounding communities for work. Many of the town residents have their roots set strongly in St. John, with eighty percent of the community owning their homes. Using the prevailing affordability criteria that housing costs should not exceed 30% of net income for a family earning 80% AMI, an affordable home needs to be mortgaged for below \$105,000 before accounting for utilities and potential maintenance costs. for a detailed breakdown of a typical household budget based on the St. John median household income.



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Researching the typical home in St. John was important for our design. We needed to determine existing conditions, which would then inform our studio of needed improvements given the current landscape. Three types of homes struck us as ideal examples for our research; these homes are considered typical for St. John and include a home from the 1920s, a home from the 80s, and typical new construction. Using DIVA, a program for daylight and energy analysis we were able to produce daylight studies and energy models to compare the energy consumption and costs associated with these options. To understand the energy consumption of the homes, assumed typical construction during the time each home was built, having heard anecdotally from community members that many older homes have not received weatherization upgrades. Using those assumed values, we could compare the typical energy usage of homes of similar size. While the 1920s home does not represent every home in St. John, according to our survey of homes in the community, a majority of homes are from this vintage as are many of those currently for sale. The process to the right shows a breakdown of expenses associated with purchasing and operating different homes in St. John.

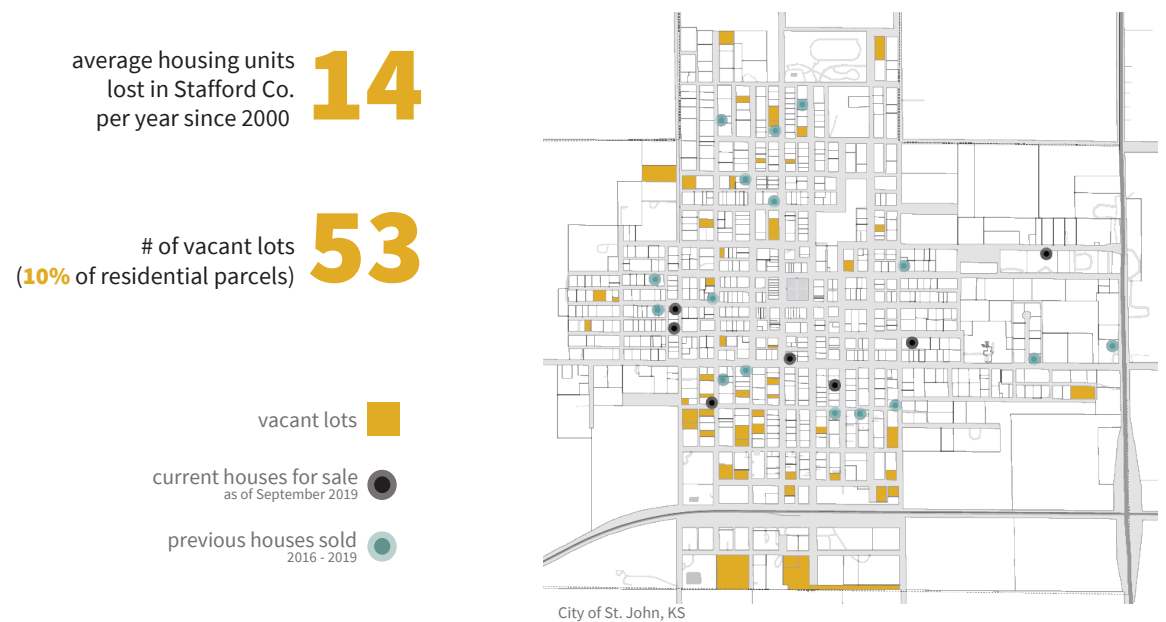


In the last thirty years, only thirteen new homes have been built in St. John, representing three percent of the total homes in St. John [5]. These homes typically cost significantly more due to today's high construction costs. According to construction trends, most newly built contractor homes are built for around \$180,000; in Stafford County, such a new home would still use construction and insulation methods similar to those used the 1980s. According to our analysis, a new home of this type would have an EUI of 45.3 kBtu/SF annually, which is approximately \$1434 per year in energy expenses on top of the expense of the mortgage. For the user group we were designing for in St. John, the mortgage plus energy costs would be unaffordable.

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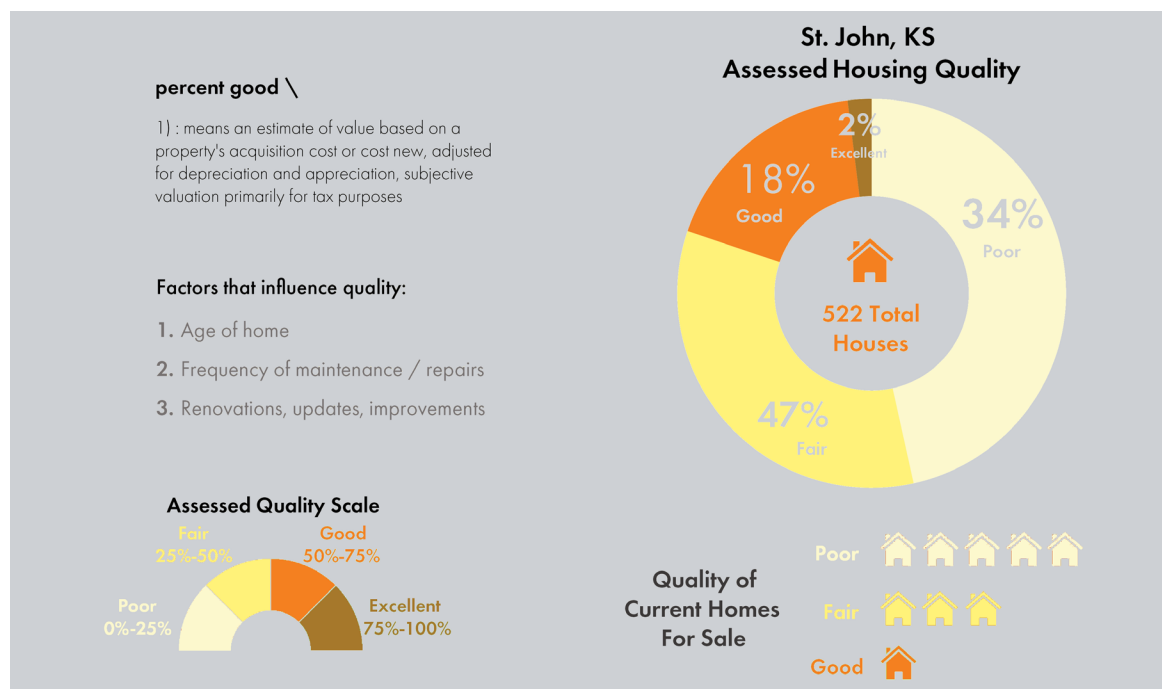
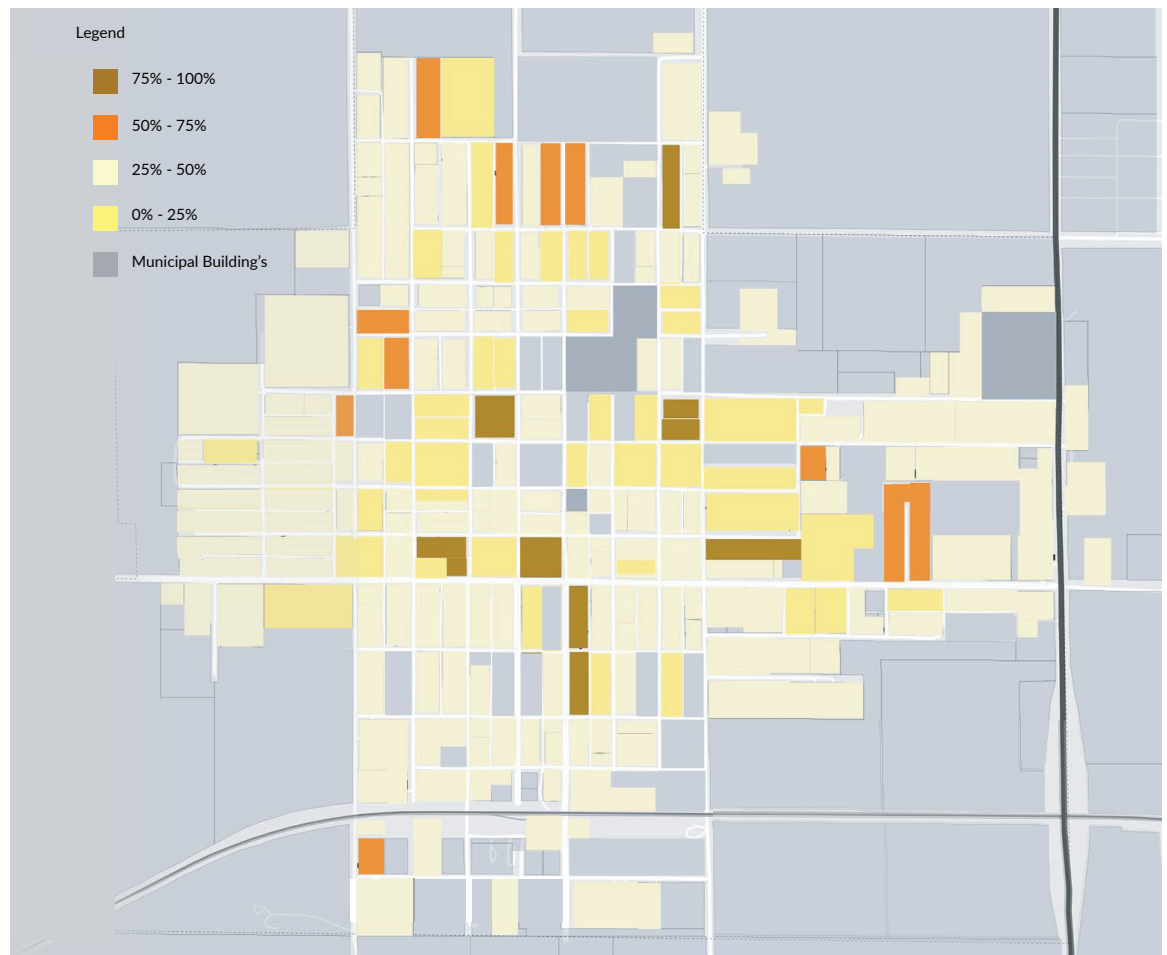
Research Analysis

The town of St. John has fifty-three vacant lots at an average price of two thousand dollars per lot, with common sizes of either 60 feet wide by 120 feet deep, or 120 feet square. [5]. The vacant lots listed on our map are all potential locations for new Net Positive homes and some are being considered for development by our client. According to the city of St. John, many standing dilapidated homes are yet to be demolished but development would currently be unlikely to replace them; these additional lots could be perfect future spaces for new Net Positive homes. Because the Net Positive studio and St. John have chosen to create a prototype home that could be replicated throughout St. John, the form and function of the design needed to adapt to different locations and orientations. Later studies were conducted to explore how the prototype could be adapted to some of these vacant parcels, using both one- and two- dwelling configurations.



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Assessed Quality



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Assessed Quality

The assessed quality of homes is specifically for tax purposes, to determine the appropriate value of a home based on assessment comparisons in the area. The assessment is based on construction and finish quality, neighborhood appeal, square footage, distance from the street, curb appeal, the cost to replace the home (if for instance, it burns down), and more [10]. This data is used to quantify the quality of the home compared to another that is similar, based on similar homes in or near the town. Please note each county and jurisdiction calculates the percentages differently and can vary dramatically. This is used to determine how much to charge for tax purposes and is subjective [10]. Figure 2.1.15 & 2.1.16 shows data collected for all 522 homes in St. John broken down by percentage's given by the county appraiser and again the most important data being that eighty-one percent of homes in St. John fall under the fifty percent quality rating.

Current Homes



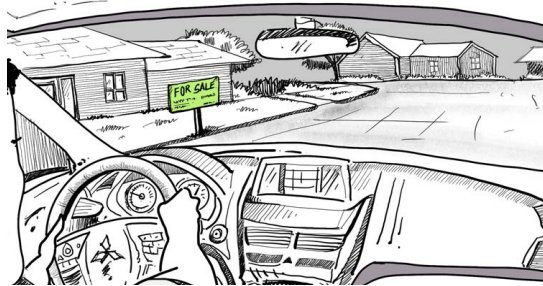
Figure 2.1.8 - Current Homes for Sale in St. John, KS

According to Zillow, from 2016-19, sixteen homes have been sold in St. John, and ten properties are currently on the market. Each one has had more than its fair share of use, having been mostly built at the start of the 20th century. However, according to the county appraiser, only one of the listed homes is considered of good quality, with most of the available homes falling between 1,000 and 1,500 square feet. This small range of options, paired with quality and size issues, means future homeowners and current residents are forced to wait years for the home they want. Home buyers may also balk at the challenge of mortgaging a lower quality home or knowing they will have to invest significant amounts of money to get such a home to meet living standards.

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Current Homes

"In order to better understand the market potential of our project, the team imagined what it would be like to be first time homebuyers, looking for housing in town. Based on our engagement with community members, we found many people were moving into town to be closer to family or local jobs, avoiding expensive rural commutes and looking to settle down into a more economically sustainable lifestyle."



"Won't it be great to finally live close to where we work, and with your parents nearby we can take the kids out of that expensive daycare. With everything going on with the economy now, I'd feel more comfortable if we can start saving some money and paying off our debts." (Prospective family)



"The homes that are available are limited and may be of poor quality, repairs may be needed, you may have to wait for the right property to become available" (Agent)

"What are our next steps?" (Prospective family)

"Go and see the bank to see what types of loans you qualify for" (Agent)



"Based on your income, you can mortgage a home for around \$120k, but you will need a downpayment of \$24k." (Bank)

"There aren't many homes in town that are in good condition and are in that price range, and we don't have that much for a down payment. What about a home that is less than \$100k?" (Prospective Family)

"Those homes will not qualify for a mortgage unless they can pass an inspection and an appraisal. If those older homes need repairs, you will probably have to pay for the repairs out of pocket." (Bank)

"What about building a new house?" (Prospective Family)

"Due to the high cost of new construction, we cannot qualify you for a new construction loan." (Bank)



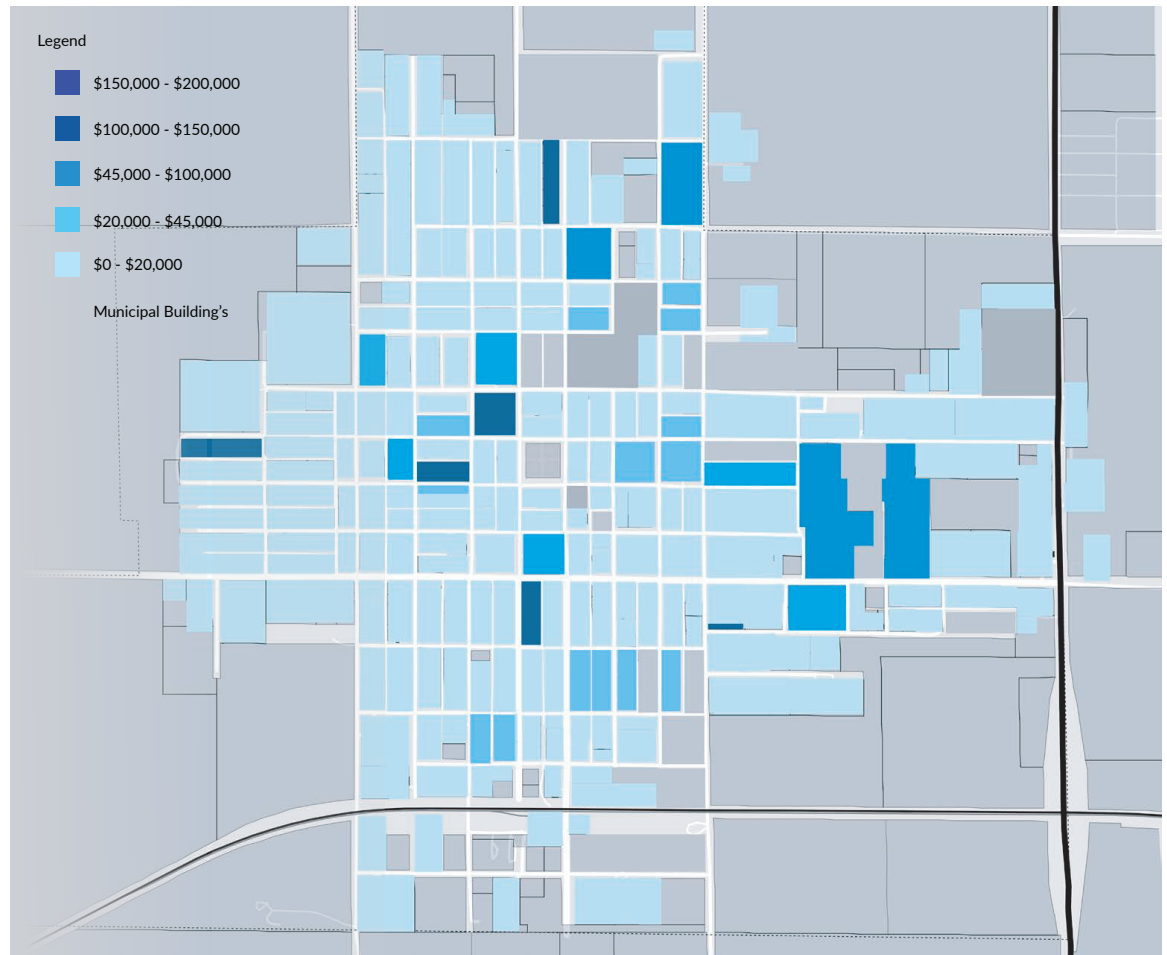
"We could just move to Hutchinson and be 45 minutes away from St. John, but we would really like to stay. What do we do?" (Prospective Family)

"We have something that might help you. Your income qualifies you for financing assistance from the Moderate Income Housing program, which will help you to make a down payment on a secured loan to build a new Net Positive home. It will be a good fit for your family and will meet your budget, and it is a net zero home so it has many great passive design features and you will save hundreds of dollars each month on energy costs." (Economic Development)

"That's great news. I'll tell the family!" (Prospective Family)

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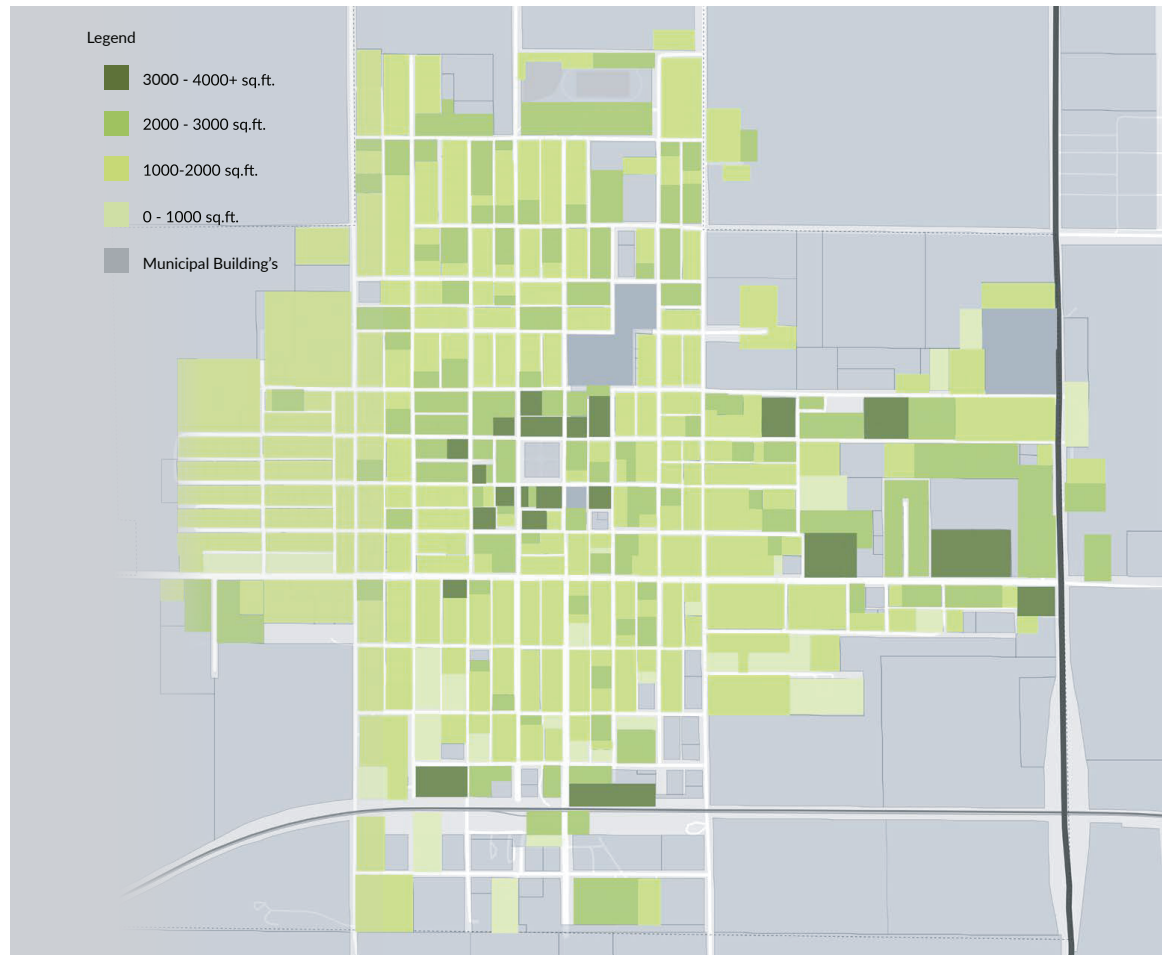
Home Value By Lot



According to the county appraiser's data, the median property value in St. John is \$45,000, with the highest value at \$281,000. A majority of homes are categorized in the \$20,000-\$45,000 range. The homes in this range are usually between fifty to one hundred years old and are of low quality, likely due to age and lack of maintenance or repair. If the homes are repaired, they would likely not gain a significant amount of value due to their location and adjacent to homes of lesser value. Based on the area median income, the cost of a higher quality home may prevent some families from being able to afford homes in the area of St. John. Our design in St. John will hopefully mitigate some of the issues and allow residents an affordable yet high-quality option.

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Home Size By Lot



From the county appraiser's data, most homes in St. John are between 1,000 to 2,000 square feet, with a typical home having two to four bedrooms on a typical 120-foot-deep lot, with a 25-foot setback. The map above shows the average square footage of homes in St. John by block. While the map reveals a concentration of larger homes in the center of town, home size is diverse in the remainder of the town. Data on home size helped us determine the target size for the Net Positive Studio prototype.

Conclusion

The prototype home at St. John is net zero, high quality, healthy, and affordable. There's an affordable housing shortage not only in St. John, but also nationwide. The home at St. John will help the public understand that homes can be affordable but also energy efficient, which will encourage more homes just like this one to be built either by non-profit development organizations, but also possibly by for-profit contractors too. Stafford County Eco Devo has already received funding to build four more houses just like this one. They are looking for contractors and hope to start building in 2021.